Corporate Management in an Academic Work Environment

Brian P. Fairhurst
Associate Director for
Management & Administration
National High Magnetic Field Laboratory

Agenda

- Overview of National High Magnetic Field Laboratory (NHMFL)
- NHMFL management needs and challenges identified in 2001
- Profile of *Operations Manager, Magnet Science and Technology, NHMFL*
- Initial results in response to NHMFL needs
- Basic Business Functions and Governance
- Ongoing cultural challenges
- Lessons learned and ideas to secure a long-term future
- Summary

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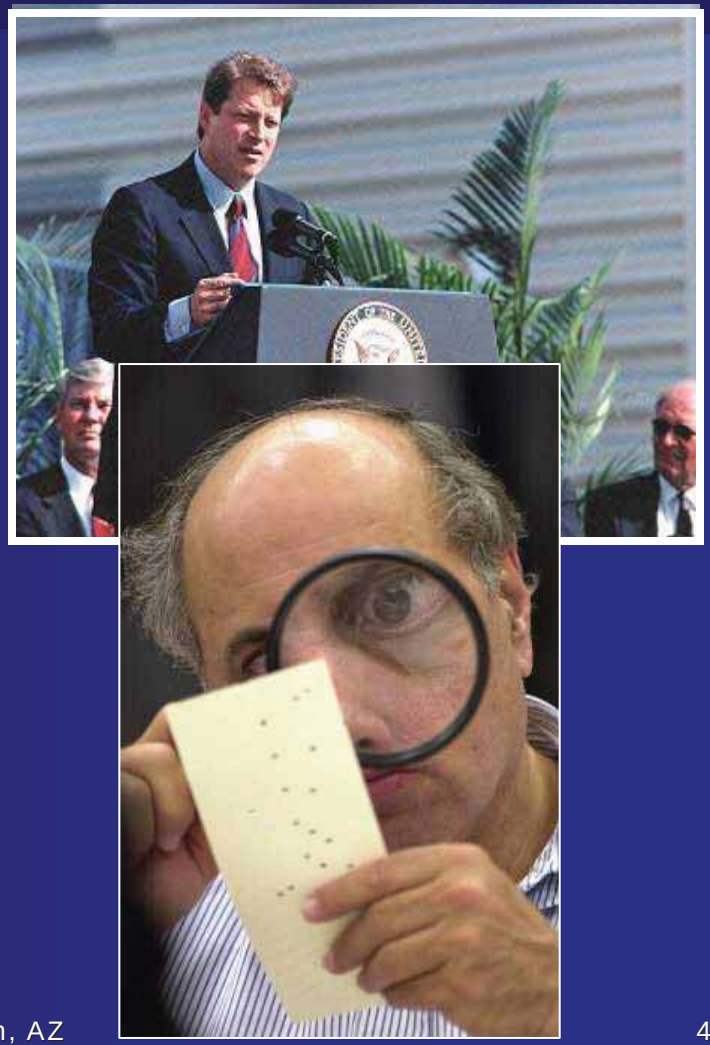
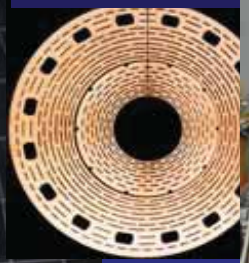
A brief history…

- August, 1990: NSF awards National High Magnetic Field Laboratory to Florida State University
- 1990-1994: Lab's main campus – a 330,000-square-foot complex – constructed in Tallahassee
- October, 1994: Magnet Lab dedicated; Vice President Al Gore is the keynote speaker
- 2000: Al Gore returns to Tallahassee under very different circumstances!



45T Hybrid
DC Magnet



Florida State University

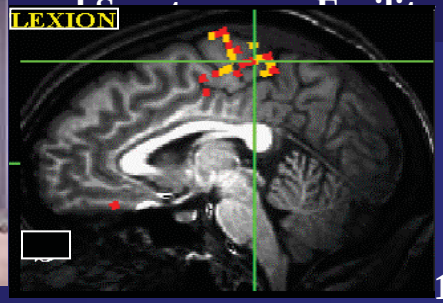
Los Alamos National Laboratory

89T Pulse Magnet
15mm bore

11.4T MRI Magnet
400mm warm bore

University of Florida

Advanced Magnetic
Resonance Imaging



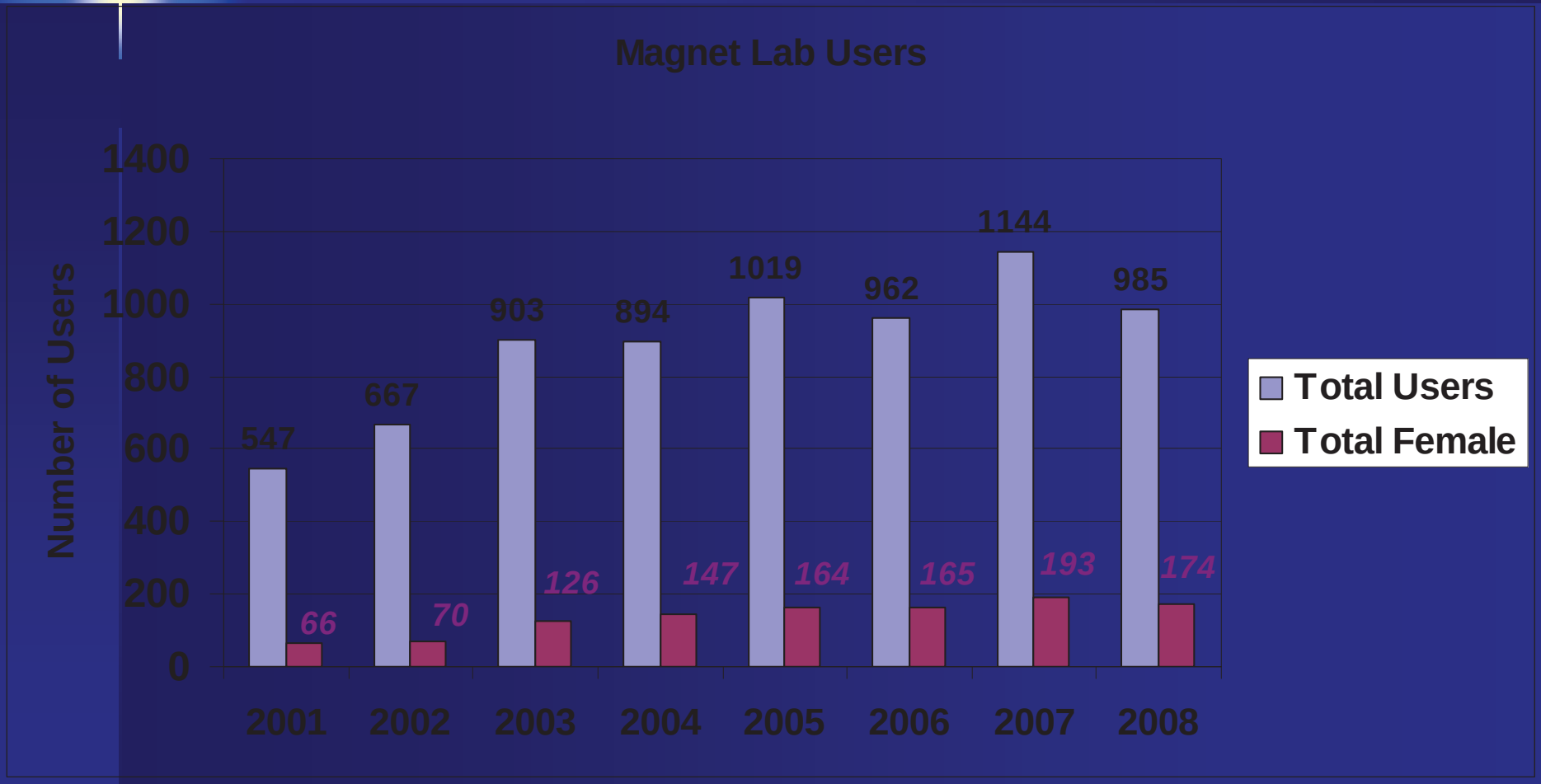
High B/T Facility
17T, 6weeks at 1mK

900MHz, 105mm bore
NMR Magnet

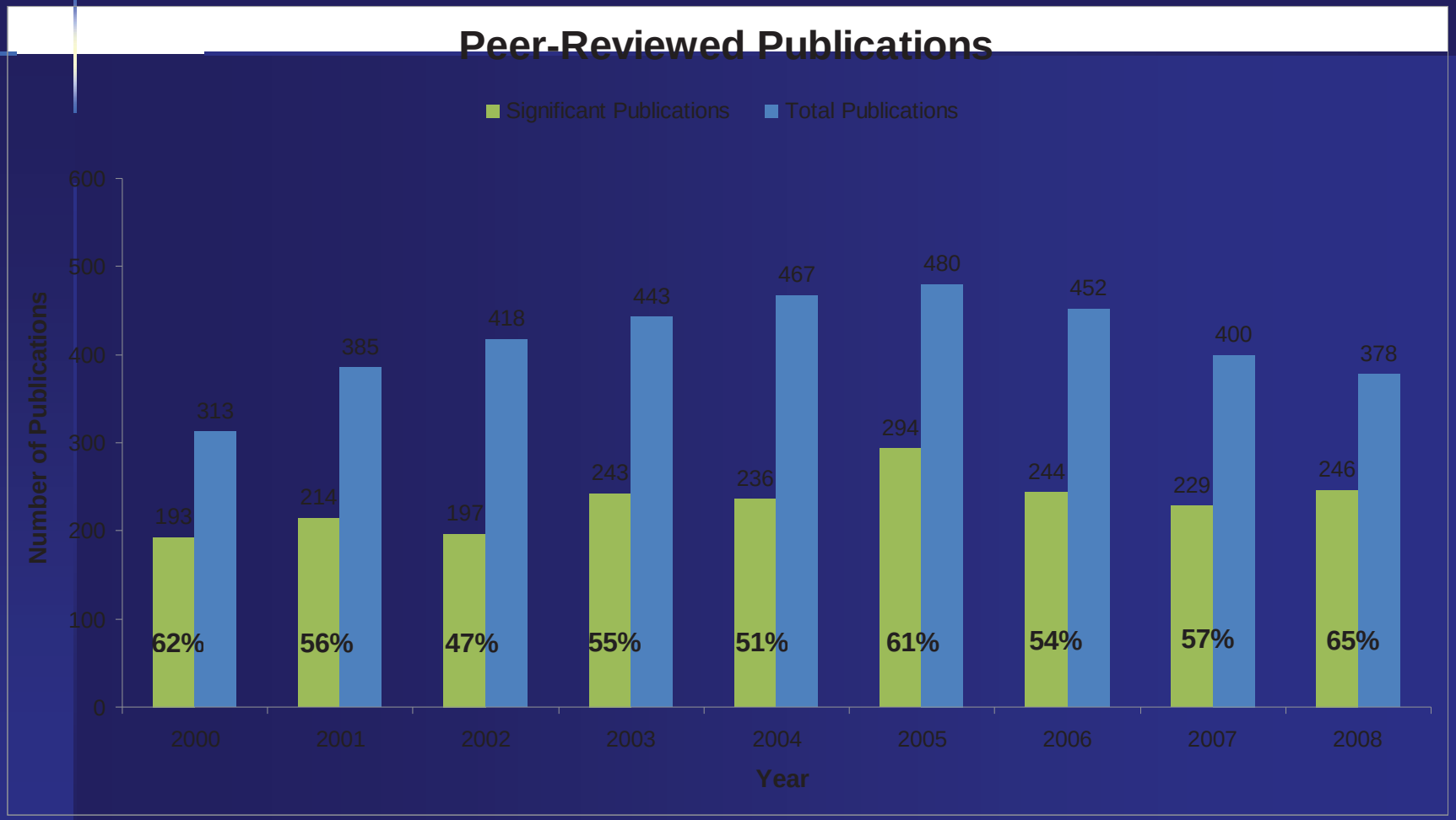
NSF Charge:

- To provide the highest magnetic fields and necessary services for scientific research conducted by users from a wide range of disciplines, including physics, chemistry, materials science, engineering, biology, and geology
- To advance magnet technology and U.S. competitiveness
- To enhance science education at all levels

Number of Users



Publications



Personnel and Budget

- Employ more than 400 faculty, staff and students at FSU branch
  - 78 graduate students
  - 43 postdoctoral associates
  - 38 undergraduate students
- International work force

- $26.5 M “Core Grant” from the NSF
- ~ $10 M funded by the State of Florida
- $10-15 M from individual investigator grants

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Management Needs and Challenges identified in 2001

- NSF Site Review Committee....

  Major magnet project(s) behind schedule and over budget....Need to recruit appropriate staff to resolve issues associated with completion of major magnet projects....

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Profile of *Operations Manager, Magnet Science and Technology*

- Hired April 1, 2001
- More than 30 years national and international experience with Fortune 100 companies
- Certified Professional Manager (CPM)
- Presided over restructuring and turnaround operations that required plant closings and personnel reassignments
- Direct responsibility for overall management of strategic planning, marketing, sales, program management, R&D, engineering, contracts, purchasing, subcontracts and administrative activities

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Initial results in response to NHMFL needs

- Actions...
  - Assumed authority over Magnet Science & Technology (MS&T) resources
  - Provided monthly status reports to the Program Manager at NSF
  - Requested monthly status reports for all MS&T projects
  - Terminated a major subcontract for default
  - Rigorously monitored use of all resources
  - Re-assigned staff to highest priority project
- Results...

Initial results....

MAGNET LAB SITE VISIT REPORT, MAY 13-15, 2002

"... Managing this mix of projects will put a premium on improved business and management practices. The Laboratory has taken a major first step in this direction with the hiring of an "operations manager" having business management experience in the aerospace industry. The Committee was impressed with the new procedures being introduced for initiating and tracking magnet construction projects.

Recommendations

- ***We strongly endorse the new focus on project planning. We also support the management decision to bring the 900 MHz project to closure whatever the outcome of the forthcoming tests.***

The New Management Plan (for Project Management)

- ***The Committee was pleased with the recent implementation of "Best Practices" management tools. Dividing the project into pre-conceptual, conceptual, engineering and fabrication stages will allow for assessment of risk and contingency, monitoring progress and adjusting budget and schedule priorities during the course of the project....."***

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Basic Business Functions and Governance

Ongoing improvements since late 2002...

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Develop a Management and Administration Plan

- Focus on Charge from the NSF
  - enhanced services from Management and Administration
- Keep it simple
- Must be convertible into a flow chart that shows how the work gets done
  - NSF, FSU, sub-awardees and subcontractors
- Used to review operational effectiveness
  - Results rather than activity, organizational vs. individual indicators...in the eyes of our "customers"

External Advisory Committee

Institutional Oversight Committee

Vice Presidents of Research
Florida State University
University of Florida

Principal Investigator
Jack Crow, Director
Co-Principal Investigators
Greg Boebinger, LANL
Alan Marshall, FSU
J. R. Schrieffer, Chief Scientist
Neil S. Sullivan - UF

Executive Committee

Users Committee

Management and Administration
Brian Fairhurst
Interim Deputy Director

Chief Budget Officer
Jenny Kinsey

Chief Administrative Officer
Clyde Rea

Director
Jack E. Crow
Deputy Director
Vacant
Chief Scientist
J. Robert Schrieffer
Chief Technical Officer
H.J. Schneider Muntau

Facilities & Safety Program

John Kynoch
Director

Government and Public Relations
Janet Patten, Director

CIRL
Pat Dixon, Director

Information Services

Corporate Liaison

Educational Media

Users' Program

CIMAR

ICR
Alan Marshall, Director

NMR/MRI
Tim Cross, Director

EMR
Louis-Claude Brunel, Director

Continuous Fields User Facilities

DC Field Facilities
Bruce Brandt, Director

High B/T
Jian-sheng Xia

Pulsed Field User Facilities

Alex Lacerda
Director

Magnet Development Program

Magnet Science and Technology
Steven Van Sciver, Director
Brian Fairhurst, Operations Mgr.

Magnet Development

Materials Development

Magnet Science

Research Program

Condensed Matter Theory
Lev Gor'kov, Director

In-House Research Program
John Eyler, Director

Mag Lab Organizational Chart 2002

National High Magnetic Field Laboratory

External Advisory Committee

Institutional Oversight Committee
T.K. Wetherell, President, FSU, Chair
J. B. Machen, President, UF
G.P. Nanos, Jr , Director, LANL

Institutional Representatives
Kirby Kemper, FSU VP for Research
Win Phillips, UF VP for Research
Micheline Devaurs, Assoc Lab Director , LANL

Principal Investigator
Greg Boebinger, FSU and UF

Co-Principal Investigators
Bob Schrieffer, FSU, Chief Scientist
Alex Lacerda, LANL
Alan G. Marshall, FSU
Neil Sullivan, UF

Users' Committee

NHMFL Director
Greg Boebinger

Executive Committee
Reza Abbaschian
Greg Boebinger
Bruce Brandt
Tim Cross
Jack Crow
Art Edison
John Eyler
Brian Fairhurst
Alex Lacerda
Alan Marshall
Chuck Mielke
John Miller
Hans Schneider
Bob Schrieffer
Neil Sullivan
Yasu Takano

Chief Scientist
Bob Schrieffer

NHMFL Associate Director User Programs
Alex Lacerda

NHMFL Associate Director Management & Administration
Brian Fairhurst

Condensed Matter Theory
Lev Gor'kov

In-House Research Program
John Eyler

Condensed Matter Experiment

CIMAR

Nuclear Resonance
Tim Cross

Magnetic Resonance Imaging Facility (AMRIS)
Art Edison

Ion Cyclotron Resonance
Alan Marshall

Electron Magnetic Resonance
Louis-Claude Brunel

Condensed Matter NMR
Arneil Reyes

DC Field Facility
Bruce Brandt

Pulsed Field Facility
Chuck Mielke

High B/T Facility
Yasu Takano

Geochemistry
Vince Salters

LANL Magnet Team
Jim Sims

Magnet Science and Technology
John Miller

Functional Group Leaders

Project Leaders

Matrix of Powered, Pulsed, Persistent Magnet Projects

Government and Public Relations
Vacant

Center for Integrating Research and Learning
Pat Dixon

Web Outreach
Mike Davidson

Computer Support
Pete Jensen

Chief Budget Officer
Terrie Price

Chief Administrative Officer
Clyde Rea

Human Resources Administrator
Bettina Roberson

Facilities and Safety
John Kynoch

Mag Lab Org Chart 2004

Validation of the Management and Administration Plan

May 2004 email to Brian Fairhurst from NSF Program Officer for oversight of the NHMFL

"I am especially grateful to you for the badly needed management expertise you have brought to the Lab and for the very collegial way you have gone about reforming the entire suite of management activities.

I very much doubt that the 900 MHz magnet would be undergoing commissioning now if it had not been for the discipline you brought to this project."

Hugh Van Horn
NSF Program Officer
(Retired May 2004)

Analysis of Basic Business Functions and Governance

Ongoing improvements since late 2002...

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Create internal and external communications channels

- Recommended “All-hands” meetings, FSU Staff Meetings, “Random Employee Lunches” and “From the Director’s Desk” emails to new Director
- Recommended monthly telephone call between Director, Associate Director and NSF Program Officer
- Developed and introduced “MagNet”
- Enhanced Educational Programming
- Overhaul of NHMFL website – internet and intranet
- Active leadership of outreach activities – Open House, lab tours w/VIP’s, newspaper editorial board, Leadership Tallahassee, Economic Development Council, Issues in Education TV Program, American Cancer Society Relay for Life
- Bi-weekly 1-on-1 meetings with my direct reports
- Birthday lunches with all direct reports

Magnet Lab in the news, on the air, and on the Web

While the scientists are charged with establishing and protecting the lab's reputation in the scientific community, the lab's Public Affairs group is charged with doing the same in the general public. Media outreach is more than good "PR" – if kids don't read or hear about scientists in the news, they may not see science as a viable career option.

Print highlights

The lab enjoys strong editorial support in the capital city's newspaper, with four supportive editorials in 2006 alone. Lab research and activity is regularly featured in university publications and on section fronts of the newspaper.

Strong editorial support

Jan. 17, 2006:
"Cosmic questions: Mag Lab pursues universe's secrets"
Feb. 17, 2006:
"Come see: Mag lab needs groupies"
May 14, 2006:
"Innovating: Successful future depends on it"
July 27, 2006:
"Only logical: FSU-Scripps a fitting alliance"

Front-page news

Oct. 6, 2005:
"FSU lands superconductor lab"
Jan. 17, 2006:
"Mag lab to study comet dust"
Jan. 9, 2006:
"Magnet research pulls scientists to Florida site"
Feb. 16, 2006:
"Mag lab staying put at least through 2012"
Feb. 21, 2006:
"Scientists digging in to dust snatched from comet"
June 26, 2006:
"FSU is learning to lure scholars"
Sept. 27, 2006:
"Major grant awarded to mag lab"
Oct. 18, 2006:
"Mag lab has millions in mind"
Dec. 2, 2006:
"FSU professor takes close look at influenza virus"

Broadcast highlights

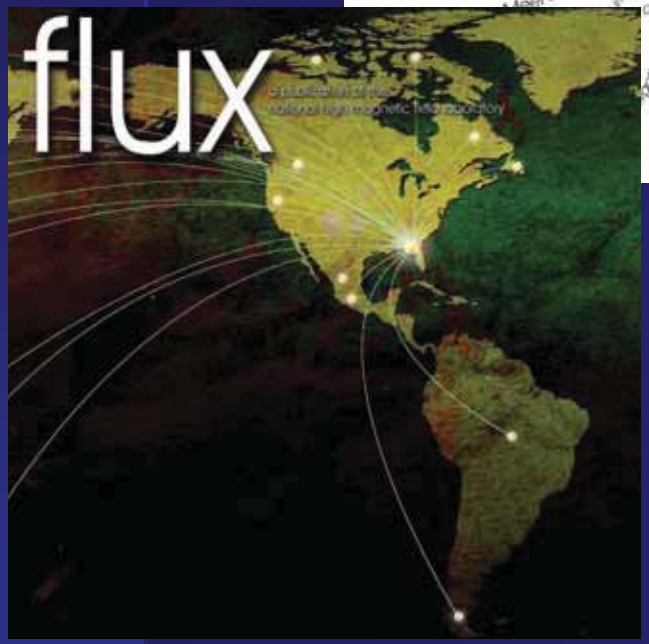
- The lab is the subject of a 30 minute documentary to air statewide on Florida Public Television.
- "UF-FSU Same Team" – this 30 second video piece put the lab in front of a nontraditional audience (sports fans) and emphasized research excellence at the lab's two Florida sites.
- Director Gregory S. Boebinger and the lab are featured in FSU's Institutional Spot, which airs during every nationally televised FSU game.
- News of the commissioning of the 900 megahertz magnet made news worldwide, and was even referenced on "The David Letterman Show".
- A piece on the lab's research on the Wild2 comet dust was featured on National Public Radio's "All Things Considered" in December of 2006.

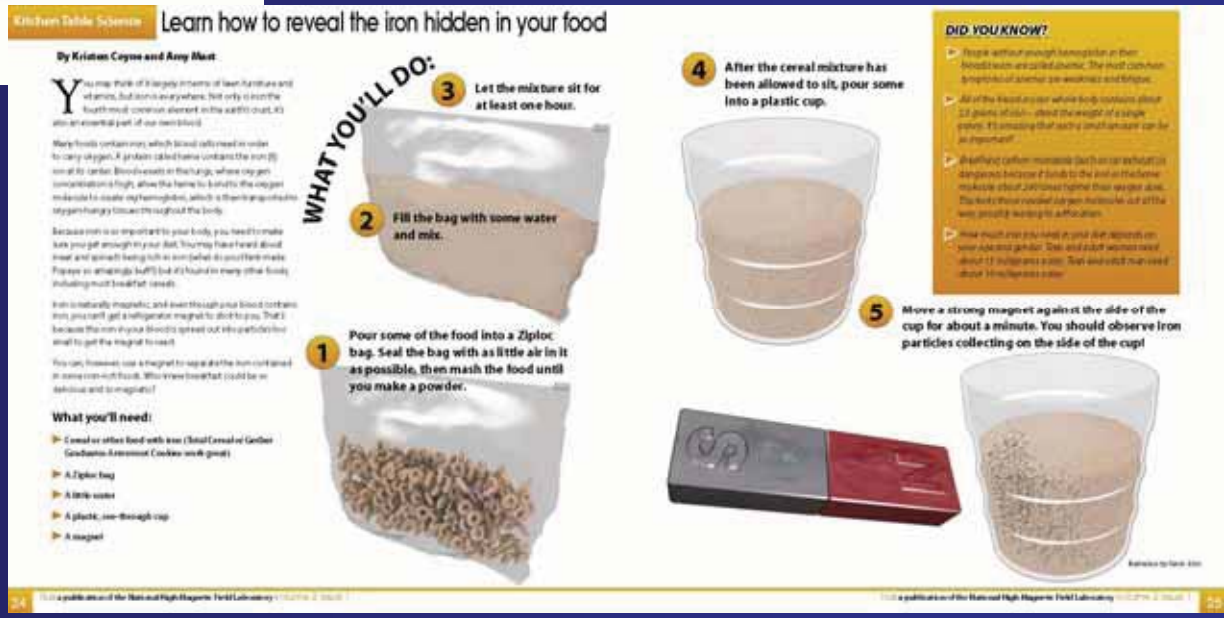
A growing presence online

- "Raiders of the Lost Dimension" – news about condensed matter physics research - was all over the Internet. The news was picked up by Fox News, and versions of it appeared on well-read science blogs such as Atomic Surgery and Science A Go-Go.
- Coverage of the 100 T at Los Alamos appeared in online versions of The Washington Post, CNN, CBS News and much more.
- The Magnet Lab climbed its way up Google rankings and now consistently ranks as the top search return. This is a direct result of the increase in and consistency of the news coming out of the lab.
- The lab's ramped up Education Web site is an excellent and growing outreach tool that will bring lab resources to a much broader audience. *www.education.magnet.fsu.edu*
- Web site redesign is aimed at broadening the lab's appeal to the general public.

The Magnet Lab's success depends in part on the degree to which its targeted "publics" support its goals and policies.

Flux Magazine





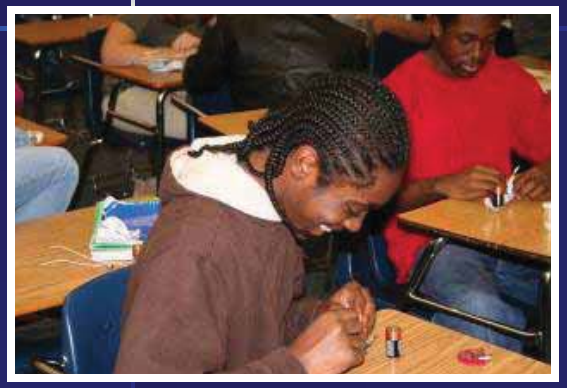
New Website - Internet

New Website - Intranet

American Cancer Society Relay for Life

Media Backdrop and "Branding"

Education & Outreach

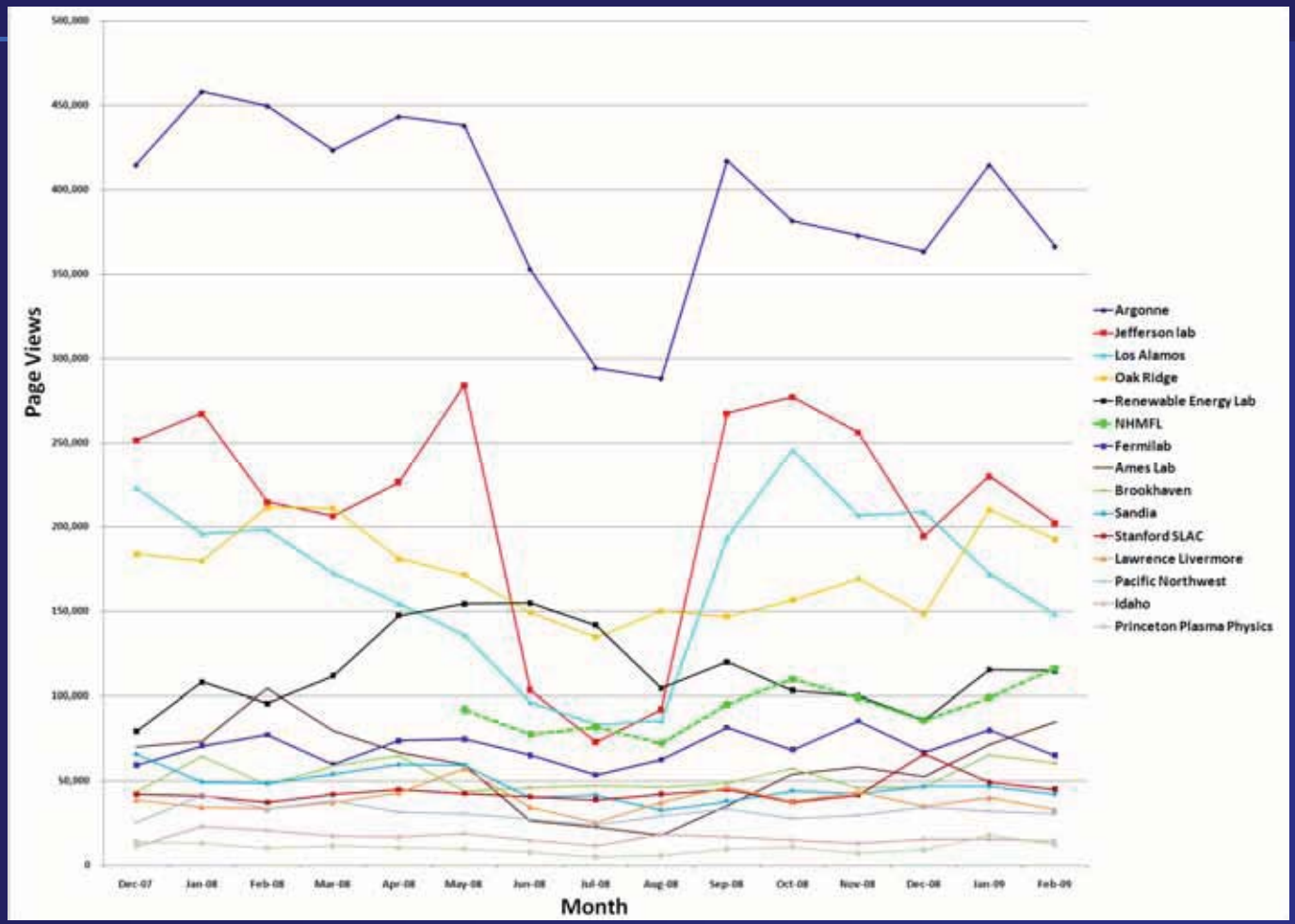


- Work with more than 7,000 K-12 students in both classrooms and the Magnet Lab
- Research experiences for undergraduates
- Research experiences for teachers
- Teacher Workshops
- Research – papers presented at national conferences, workshops and meetings
- Creation and use of a National Advisory Board
- Sci- Girls
- New publications

Education & Outreach

- Magnet academy: Open admissions policy. No pop quizzes!
- Science for English majors!
- Java tutorials: from alternating current to mass spectra...
- Fact or fiction: Answers to the sometimes silly questions

Website statistics Comparison with Other Labs



Website statistics

NHMFL Website

Google Analytics Report

May 1, 2008 – April 7, 2009

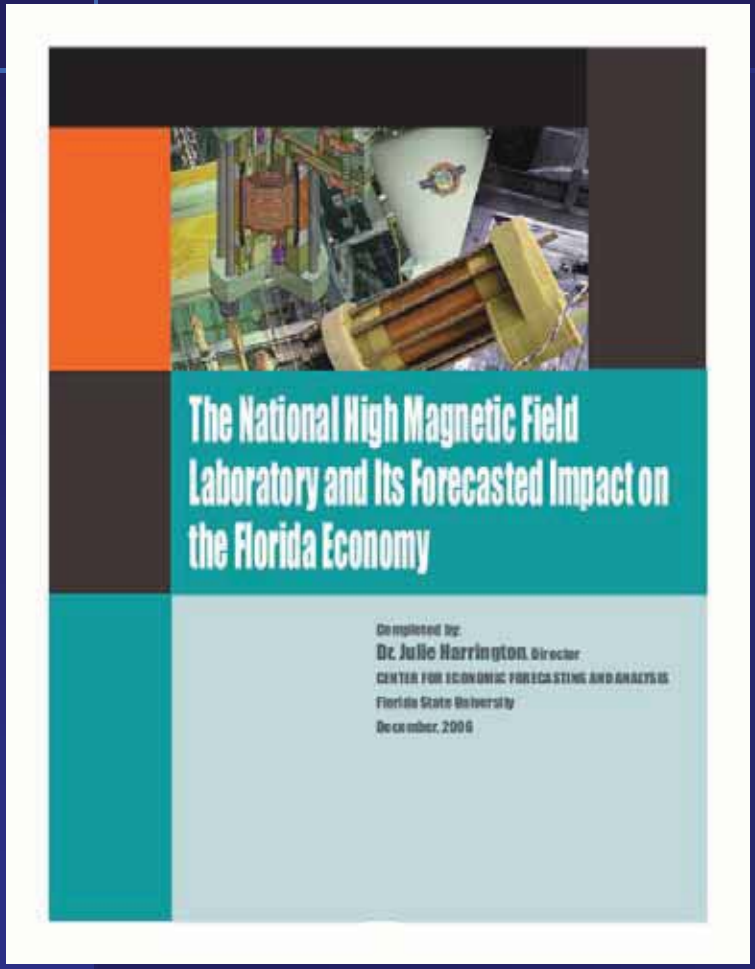
During this timeframe, the NHMFL website hosted **290,108** individual users who visited the site a total of **386,099** times. These visitors downloaded **1,085,692** pages.

Website Section	Page Views	Traffic %
Education	666,015	61.34%
Online Tutorials/Articles	553,165	50.95%
Student Activities	33,933	3.13%
Open House/Community	18,109	1.67%
REU Program	15,521	1.43%
Teacher Activities	12,266	1.13%
RET Program	9,617	0.89%
Search Engine	120,705	11.12%
Personnel	68,498	6.31%
Website	51,082	4.71%
Publications	1,047	0.10%
Home Page	90,400	8.33%
Users Hub	62,382	5.75%
Scientific Divisions	35,958	3.31%
Publications	11,536	1.06%
Travel	3,683	0.34%
Proposals	1,851	0.17%
Media Center	57,381	5.29%
Features	15,749	1.45%
News	9,025	0.83%
Fact Sheets	8,014	0.74%
Slide Shows	7,214	0.66%
Publications	6,434	0.59%
Magnet Technology	40,577	3.74%
About the Magnet Lab	19,925	1.84%
In-house Research	16,907	1.56%

Annual Open House

- More than 5,500 attendees from the Southeast in 2009!
- Outreach directed at underrepresented groups past two years has increased attendance by more than 1,000
- Demonstrations
- Hands-on activities
- Geared toward all ages

Economic Impact



- For every $1 the state invests in lab, $5.50 is generated in the Florida economy
- Lab brings between 800 and 1,000 visiting scientists from around the world to Tallahassee each year; 20 percent international
- Accounted for more than 3,000 hotel room nights in 2008; many visitors stay for more than a week

Analysis of Basic Business Functions and Governance

Ongoing improvements since late 2002...

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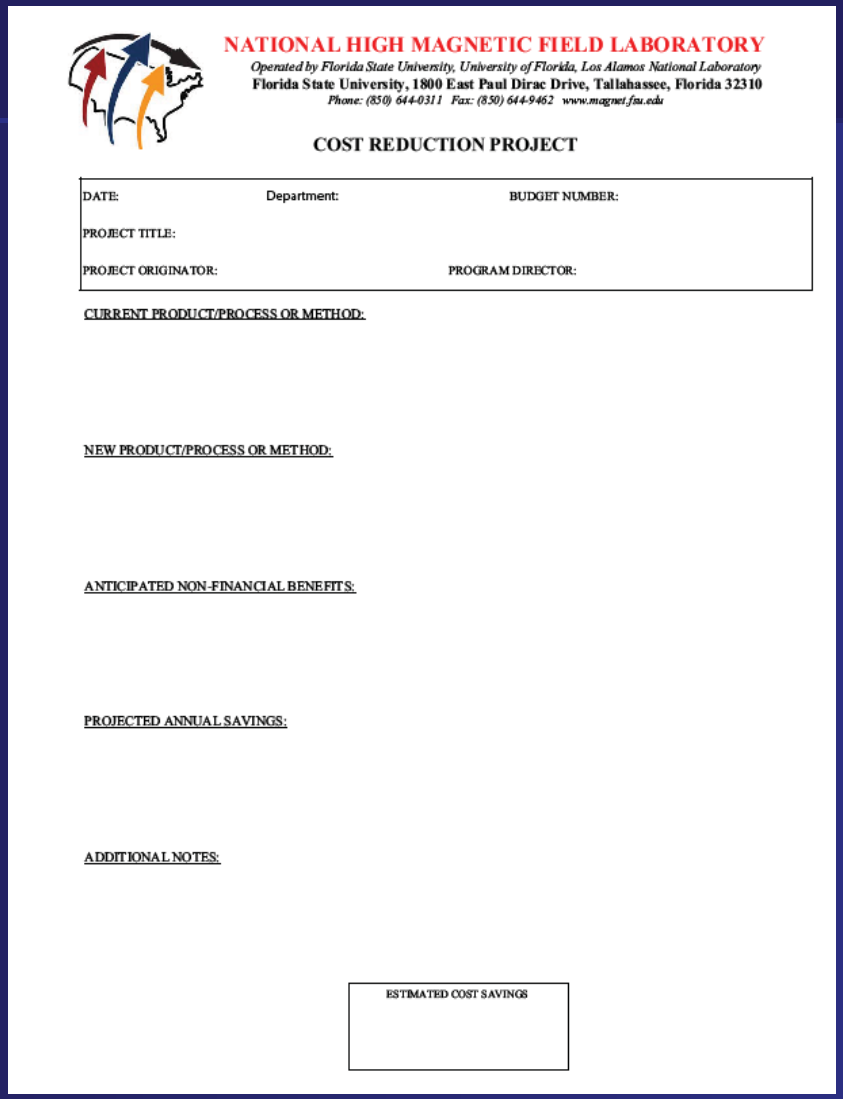
Organize the Management and Administration of Human Resources

- Establish high performance standards via comprehensive performance evaluations
- Measure and reward employees based on their evaluations
- Delegate authority, responsibility, decision-making, control, accountability and VISIBILITY as far down the organization as practical.
- Simplify and standardize whenever possible…search for more productive ways of doing things
- Conspicuous posting of office hours
- Be alert for unused or underutilized resources
- Don’t ignore low producers and deadwood…at all levels and in all organizations
- Be willing to work harder than everyone else on your team!

Cost Reduction



NATIONAL HIGH MAGNETIC FIELD LABORATORY

Operated by Florida State University, University of Florida, Los Alamos National Laboratory

Florida State University, 1800 East Paul Dirac Drive, Tallahassee, Florida 32310

Phone: (850) 644-0311 Fax: (850) 644-9462 www.magnet.fsu.edu

COST REDUCTION PROJECT

DATE:	Department:	BUDGET NUMBER:
PROJECT TITLE:		
PROJECT ORIGINATOR:		PROGRAM DIRECTOR:

CURRENT PRODUCT/PROCESS OR METHOD:

NEW PRODUCT/PROCESS OR METHOD:

ANTICIPATED NON-FINANCIAL BENEFITS:

PROJECTED ANNUAL SAVINGS:

ADDITIONAL NOTES:

ESTIMATED COST SAVINGS

Conspicuous Posting of Office Hours

Analysis of Basic Business Functions and Governance

Ongoing improvements since late 2002...

- Develop a Strategic Plan (Director and Scientific Staff)
- Develop a Management and Administration Plan
- Develop an Organization Chart (Primarily Director and Scientific Staff)
- Create internal and external communication channels
- Organize the management and administration of human resources
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- Organize purchasing and logistics services
- Organize facilities and site management
- Organize EH&S
- Organize other general services

Organize the Management and Administration of Financial Resources

- Diversification of funding sources to maintain critical resources. Cash flow is everything!
- Appropriate use of a local shadow system for financial management with links to budgets, personnel and purchasing – particularly for multiple projects and multiple funding sources

Organize the Management and Administration of Financial Resources

Intranet Demo..

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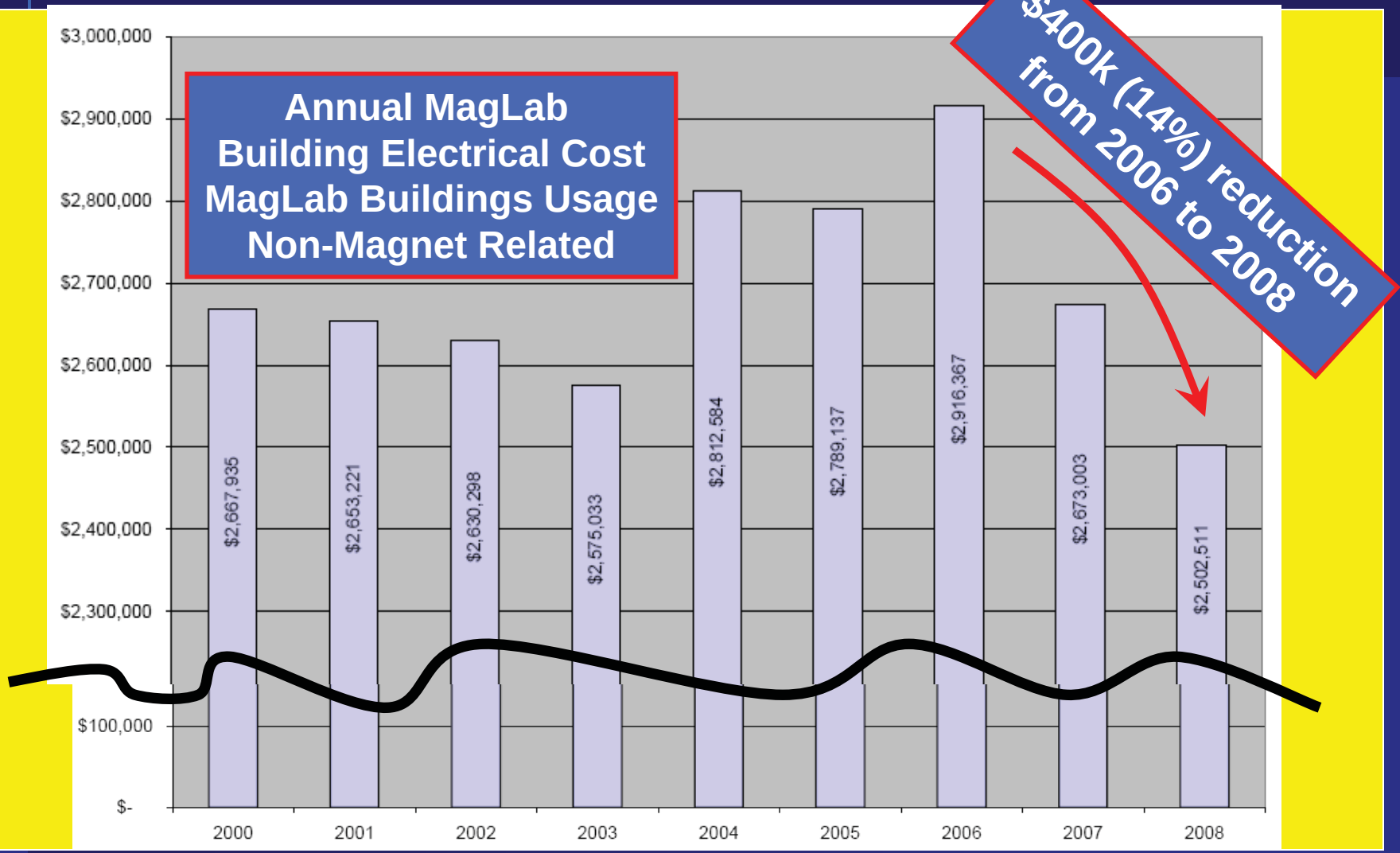
Organize Facilities and Site Management

- Develop positive relationships with other stakeholders
  - University - formal review and prioritization of major and minor projects
  - Major Suppliers – contingency plans that will prevent or minimize the loss of scientific productivity
- Employee turnover happens! Develop and maintain procedures and other information
- Maintain an awareness of the many unsung heroes and recognize them!

About electricity...

- Monthly electric bill runs between $300,000 and $590,000 a month! During peak usage, Mag Lab consumes 7% of the City of Tallahassee's electricity
- Work with city to balance consumption

Energy Reduction



Energy Reduction – Recent Actions

- Installed variable speed air compressors in utility plant during 2009
- Replaced an oversized, malfunctioning vacuum pump with a smaller more efficient unit during 2009
  - Old : 40hp, Ran Constantly
    - (Annual Electrical Cost $26,280)
  - New: 5 Hp, only 170 hrs in 2 months
    - (Annual Electric Cost $377)

Recycling at the NHMFL

- Started in July 2006
- Existing recycling program had failed because we could not consistently get the materials to a location for FSU recycling to pick it up
- 2 staff members 1.5 hours/week to collect paper, plastic, glass, aluminum, cardboard, scrap metal

Recycling at the NHMFL

Totals 2006-2008

PAPER	43,588 LBS
PLASTIC, GLASS, ALUMINUM	4,657 LBS
MAGAZINES	5,078 LBS
SCRAP METAL	23,498 LBS
CARDBOARD	17,926 LBS

Recycling – Lessons Learned

- Need a champion
- Don’t give up!
  - It sometimes takes several attempts to get a lower energy solution to work
- Local knowledge and communication can make the difference

Analysis of Basic Business Functions and Governance

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Organize EH&S

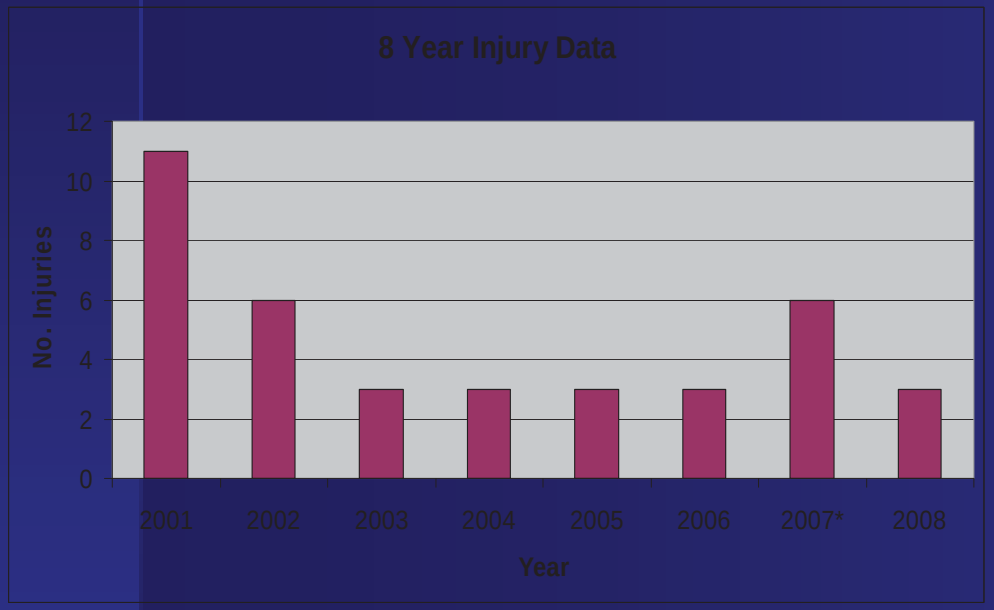
- Employee Safety and Security is #1 concern
  - Introduced ID/building access system for employees, users, contractors and visitors
  - Introduced Incident Reports
  - Changed all interior locks
  - Expanded video surveillance
  - Frequent lab inspections … and follow-up
  - Safety focus – monthly
  - Annual Safety Awards and Safety Partners
  - Capture and report good news and best practices
  - Breathe Easy Zones

Employee Safety & Security

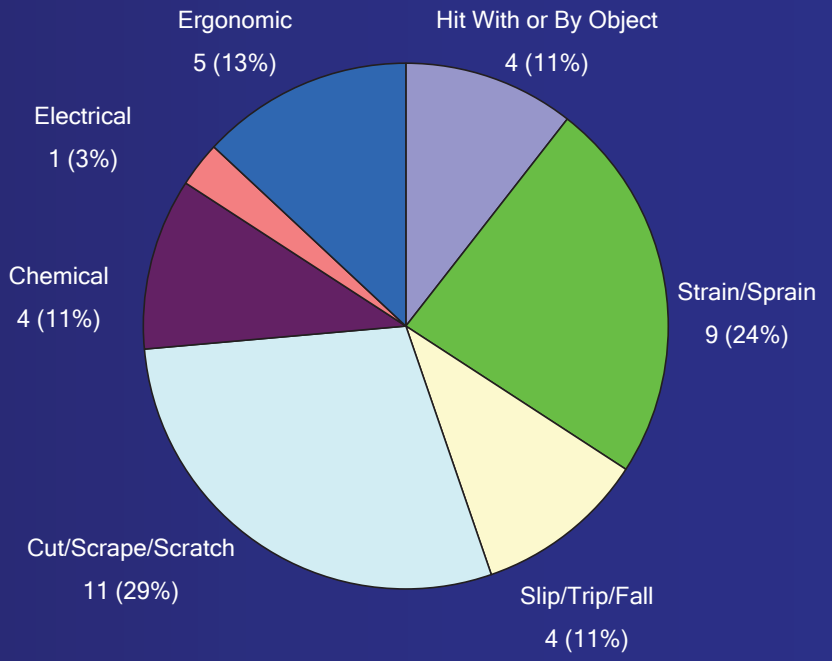
Magnet Lab Eight-Year Injury Data

Includes all injuries requiring any outside medical attention

NUMBER of INJURIES



TYPE of INJURIES



* Two of the 2007 injuries did not occur at the NHMFL

2007 Recordable Injury Rates

The Magnet Lab maintains an injury rate consistent with or below the average for scientific research facilities and universities

- Magnet Lab 1.8
- Scientific Research and Development 1.8
- College and University 2.6

2007 data from US Department of Labor, Bureau of Labor and Statistics

(based on 660,000 total work hours per year)


2008 Excellence in Safety
Laboratory
Safety
AWARD RECIPIENTS
Dr. Alexey Suslov - Lab C101C
Dr. Dragana Popovic - Lab C128C
Dr. Eun Sang Choi - Lab 130D
Dr. Greg Boebinger - Lab B325
Irinel Chiorescu - Lab C130A
Michael Davidson - Labs B107, B111 & B113
Dr. Scott Hannahs - Lab OP128
Dr. Stanley Tozer - Labs A110 & C108
Dr. Timothy Cross - Labs NM105 & NM109
Timothy Murphy - Lab OP108
Dr. William Brey - Labs C210 & C212
SAFETY PARTNERS
Advance Tool
Airgas
Aramark
Ironwood Construction
Fisher Scientific
Grainger
Janis Research Company
Lab Safety Supply
Cornerstone Tool and Fasteners
Linde Gas
Office Max
Oxford Instruments
Shoe Box
Volkert Precision Technologies

Analysis of Basic Business Functions and Governance

- Ongoing improvements since late 2002…

- Develop a Strategic Plan (Director and Scientific Staff)
- Develop a Management and Administration Plan
- Develop an Organization Chart
- Create internal and external communication channels
- Organize the management and administration of human resources
- Organize the management and administration of financial resources
- Organize purchasing and logistics services
- Organize facilities and site management
- Organize EH&S
- Organize other general services

Organize Other General Services

- Implement long-term plan for new computer support requirements: hardware, storage, Cybersecurity and 24/7 network and server monitoring, wireless access points
- Migrate to Sharepoint for information technology.... enterprise information portal

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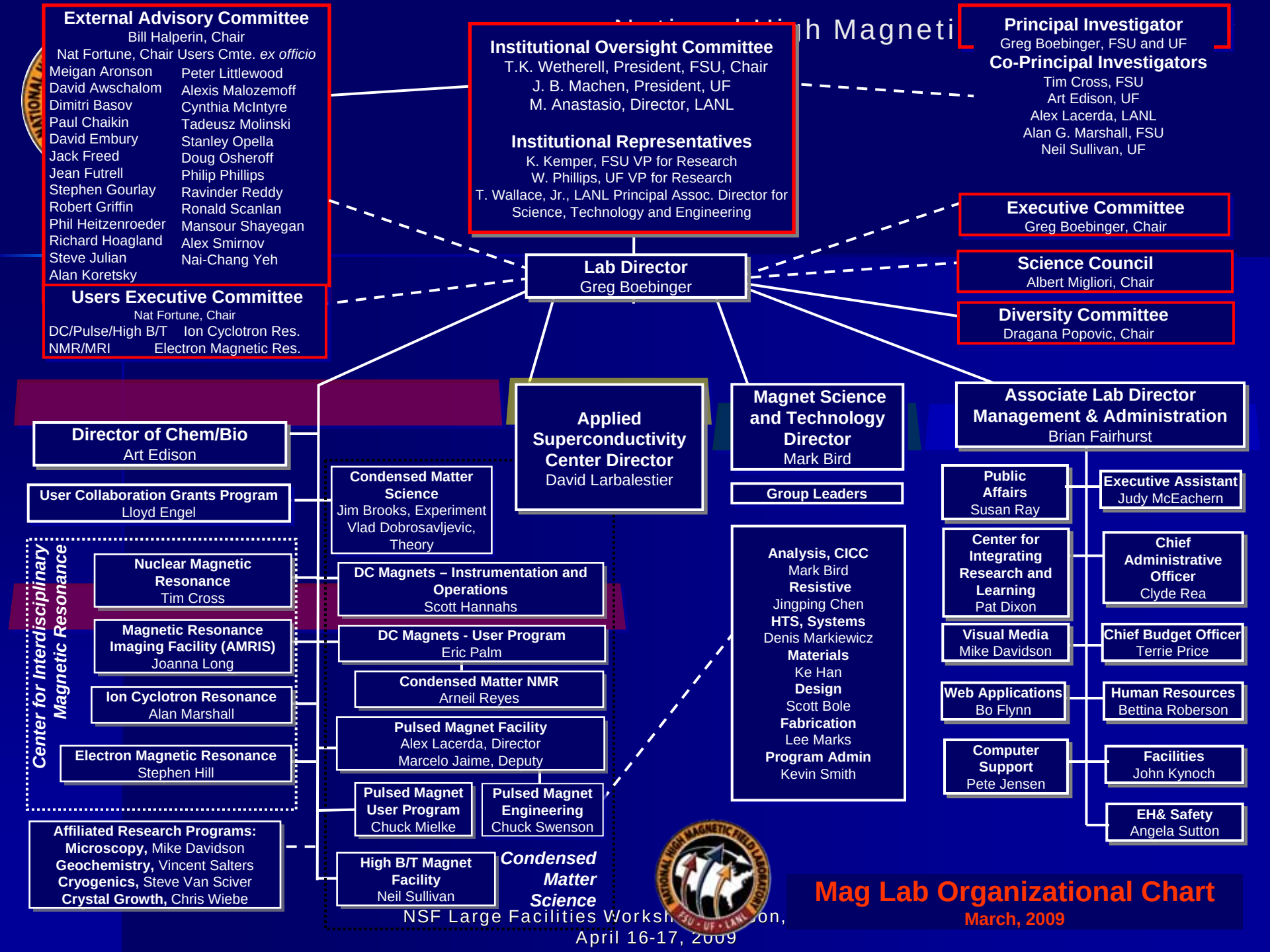
Ongoing Cultural Challenges

- Perceptions of administration at a Research Lab
  - An unavoidable nuisance
  - Scientific/technical staff don't want to hear about it but, … any problems in this area must be resolved immediately!
- Administration is the one area where everyone else is an expert
- Administrative management is not currently considered a component of the management structure/project governance in NSF Cooperative Agreement/Programmatic Terms and Conditions.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David Awschalom
Dimitri Basov
Paul Chaikin
David Embury
Jack Freed
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Phil Heitzenroeder
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Geochemistry, Vincent Salters
Cryogenics, Steve Van Sciver
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David Larbalestier
Condensed Matter Science
Jim Brooks, Experiment
Vlad Dobrosavljevic, Theory
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Scott Hannahs
DC Magnets - User Program
Eric Palm
Condensed Matter NMR
Arneil Reyes
Pulsed Magnet Facility
Alex Lacerda, Director
Marcelo Jaime, Deputy
Pulsed Magnet User Program
Chuck Mielke
Pulsed Magnet Engineering
Chuck Swenson
High B/T Magnet Facility
Neil Sullivan
Condensed Matter Science
Magnet Science and Technology Director
Mark Bird
Group Leaders
Analysis, CICC
Mark Bird
Resistive
Jingping Chen
HTS, Systems
Denis Markiewicz
Materials
Ke Han
Design
Scott Bole
Fabrication
Lee Marks
Program Admin
Kevin Smith
Associate Lab Director Management & Administration
Brian Fairhurst
Public Affairs
Susan Ray
Center for Integrating Research and Learning
Pat Dixon
Visual Media
Mike Davidson
Web Applications
Bo Flynn
Computer Support
Pete Jensen
Executive Assistant
Judy McEachern
Chief Administrative Officer
Clyde Rea
Chief Budget Officer
Terrie Price
Human Resources
Bettina Roberson
Facilities
John Kynoch
EH& Safety
Angela Sutton
Mag Lab Organizational Chart
March, 2009
NSF Large Facilities Worksh on,
April 16-17, 2009

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Lessons Learned and ideas to secure a sustainable long-term future

- A comprehensive strategic plan is important for all stakeholders – where you're going, options considered, competitors and how you'll get there
- Position titles can inflate or distort lines of authority and responsibility
- Organizational charts should be convertible to flow charts and should show how the work gets done…and used to evaluate operational effectiveness
- Too many levels of management can be counterproductive
- The learning of leadership requires more than formal instruction or teaching. But, managerial skills must be learned before you can be an effective leader.

Lessons Learned and ideas to secure a sustainable long-term future

- Safe, secure and efficient operations are integral to the NHMFL's User, Magnet Technology and Outreach Programs. They make possible the scientific accomplishments and sustain trust in the lab by our funding agencies and the general public

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Summary

- We've come a long way!
- Focus the recognition and rewards on the individuals who perform the work

The Management and Administration Team ...assisted by the Associate Lab Director

Center for Integrating Research and Learning
Pat Dixon

Facilities
John Kynoch

Administration
Clyde Rea

Computer Support
Pete Jensen

Web Outreach
Mike Davidson

2003

Budget
Terrie Price

2004

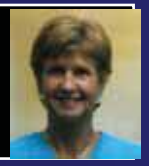
Web Applications
Bo Flynn

Human Resources
Bettina Roberson

Safety
Angela Sutton

2005

Coordinator Admin. Services
Judy McEachern



Public Affairs
Susan Ray

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www.magnet.fsu.edu